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It would appear an urgent need that adequate endowment should be supplied for the maintenance of this splendid institution at the high degree of efficiency of which it is so capable.

EDWIN B. FROST.

THE ALUMNI BIOLOGICAL EXPEDITION OF  
NEW YORK UNIVERSITY TO THE  
BERMUDAS.

THE archipelago of the Bermudas was chosen as the ground for the first expedition of the Biological Department of the University for several reasons, among them the following: the means of communication, by the steamships of the Quebec S. S. Co., was easy; they seemed to afford a tropical marine fauna in abundance for study; they were free from the malarious diseases of the West Indies, the fatality of which was so sadly proved this summer in the expedition to Jamaica, and it seemed worth while to investigate the conditions under which a station might be established for permanent research.

Thanks to a number of alumni who made liberal contributions to the enterprise, the party left New York for Hamilton on June 3d. The party consisted of Dr. C. L. Bristol, in charge; Mr. Warren H. Everett, instructor, and Messrs. Brush, Carpenter, Brown, Rosenthal and Grose, of the University; Dr. Walter M. Rankin, of Princeton University, and Dr. Tarleton H. Bean, late of the U. S. Fish Commission and now Director of the Aquarium in New York City. The party was joined later by Mr. Ernest Haycock, of Harvard University. The last of the party arrived in New York on August 8th. Headquarters were established at the Harrington House, about six miles from Hamilton and situated on the narrow strip of land separating Harrington Sound from Castle Harbor. A vacant house near the shore of Castle Harbor was transformed into a comfortable laboratory, and from this

as a center trips were made in various directions.

The most attention was given to a search for the various forms and a careful survey of the general conditions subtending their abundance and collection, so that, taken as a whole, the work might prove a reconnaissance and furnish knowledge for future investigations. In this the expedition was fairly successful and would have been much more so but for a long spell of southwest wind which prevented off-shore work, excepting for a few days. One instance of this may be given. Captain Meyers, of St. Georges, very kindly put his large ocean-going tug and a diver at our disposal to go to North Rock, and for a whole week we waited before a favorable morning came, but on that day, just as we arrived at the collecting ground, a heavy wind prevented any serious work. Our work was confined mainly to the lee shores and here we were greatly rewarded. Of corals the genera *Diploria*, *Meandrina*, *Astrea*, *Siderastrea*, *Porites*, *Isophyllia*, *Oculina* and *Mycedium* were found; of gorgonians, *Rhipidogorgia* and *Gorgonia*. The Actinaria are very abundant and our collections are numerous. We found but few hydroids and a mille-spore coral. The Medusæ and Hydro-Medusæ are very abundant in the still waters of Harrington Sound. The Echinoderms are exceedingly interesting and abundant. The Holothuria are represented by the genera *Holothuria*, *Semperia*, *Stichopus*, the last being very abundant. The Asteroidea are few and are represented by one species of *Asterias* and one of a new genus not yet determined; the Ophiuroidea by several genera. The Echinoidea are represented by *Cidaris*, *Diadema*, *Hipponæ*, *Echinometra*, *Toxopneustes*, *Mellita* and one new genus. The Crustacea are numerous and exceedingly interesting. Our collections will be studied by Dr. Rankin, who will report on them later.

The Mollusca of the archipelago number, according to Heilprin, about 170 marine forms and 30 terrestrial. Among the cephalopoda are *Octopus* and *Argonauta*. The naked *Aplysia* is fairly abundant, and, numerous other naked mollusks are found in Harrington Sound.

The Annelids are not as numerous in the places we searched as we expected, but those we found are new to us and the genera are not yet determined. The sponges are very numerous in genera and plenty in individuals. The Tunicates are exceedingly numerous and offer a rich field for investigations. *Amphioxus* is reported, but we had no opportunity to search for it. The abundance and beauty of the Bermuda fishes is notorious. Dr. Bean is making a study of them, carrying on the work started by his colleague, the late G. Brown Goode. Incidental to the main work of the expedition we undertook to furnish the Aquarium in New York with live specimens of some of these fishes, and thousands of visitors to that institution testify to their beauty and gracefulness. This part of the work was by no means the least interesting. We installed four large tanks and a pumping engine on White's Island, in the harbor of Hamilton, and acclimated the fish before transferring them to the steamship. On board the boat the fish were supplied with running water, thanks to the kindness of the Quebec Steamship Company, and no small part of our success was due to the generous and skillful aid given us by the Chief Engineer, Mr. Ritchie. Under these favorable conditions our loss was slight and another season will be much less. It is interesting to note that our efforts to bring invertebrates alive failed in every case but one, though we could keep them in prime condition until we struck the polluted waters of the coast, when they died quickly. Our failures, however, have suggested remedies, and next year we hope to show *Octopus*, *Palinurus*, *Ibacus*, *Aplysia* and the

sea-anemones, as well as the fishes. The fishes thrive in the Aquarium, although the water is several degrees cooler than they are accustomed to and the salinity much less. There would be little difficulty apparently in carrying them from New York across the Atlantic, if that were desirable, under the same conditions that we carried them from Bermuda.

Our hasty survey strengthens the idea of establishing a station, and we are planning to have one in working condition by the summer of 1899, if not before. It will have two stories, the lower given up to aquaria, as at Naples, and open to the public during the winter at a small fee; the upper story will be fitted up for a laboratory, and while under the charge of the University will be open to any one competent to carry on an investigation in botany or zoology. It is not intended to rival any of the stations on the Atlantic coast, but to supplement them and to afford opportunity to investigators of America and Europe to study the flora and fauna of a tropical horizon with ease and comfort. The healthfulness of the place is attested to by the yearly visitation of over two thousand guests who spend the winter months there. Malaria is unknown, as is also prostration by heat. The climate during June and July is not disagreeable, the thermometer rarely going up beyond 82° F.

Another project in hand with the station at the Bermudas is the exploration of the West Indies with the Bermudas as a base. Two lines of steamers connect the islands with the West Indies, and the scientist starting on them equipped from the appliances of the station may make a rapid collecting trip to a desired location and return to work over his material under the more favorable conditions at the station.

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